

Claims

1. A base station of a cellular telecommunication system, comprising:

an antenna unit for radio frequency reception and transmission;

an electronically tunable diplexer connected to the antenna unit for separating a transmit radio frequency band from a receive radio frequency band, a tuning range of the electronically tunable diplexer covering at least two radio frequency sub-bands used parallel in a telecommunication system, the electronically tunable diplexer being tunable, on site, to a radio frequency sub-band allocated to a base station;

a transceiver connected to the electronically tunable diplexer for performing a conversion between a fixed frequency band and the radio frequency sub-band allocated to the base station; and

wherein the transceiver includes a signal conversion chain for performing at least a portion of the conversion, at least a portion of the signal conversion chain being shared between frequencies within the tuning range.

2. A base station according to claim 1, wherein the electronically tunable diplexer is configured to operate in a receive tuning range covering receive sub-bands of at least two system bands, the electronically tunable diplexer being tunable, on site, to a receive sub-band allocated to the base station.

3. A base station according to claim 1, wherein the electronically tunable diplexer is configured to operate in a transmit tuning range covering transmit sub-bands of at least two system bands, the electronically tunable diplexer being tunable, on site, to a transmit sub-band allocated to the base station.

4. A base station according to claim 1, wherein the electronically tunable diplexer is configured to operate in a receive tuning range covering at least two receive sub-bands of a system band, the electronically tunable diplexer being tunable, during operation, to a receive sub-band allocated to the base station.

5. A base station according to claim 1, wherein the electronically tunable diplexer is configured to operate in a transmit tuning range covering at least two transmit sub-bands of a system band, the electronically tunable diplexer being tunable, during operation, to a transmit sub-band allocated to the base station.

6. A base station according to claim 1, wherein the electronically tunable diplexer is tunable, on site, to provide a passband narrower than a system band allocated to the base station.

7. A base station according to claim 1, further comprising a control unit connected to the electronically tunable diplexer and the transceiver for controlling frequency characteristics of the base station.

8. A base station according to claim 1, wherein the electronically tunable diplexer comprises a receive portion and a transmit portion connected to the antenna unit;

wherein the transceiver comprises a transmitter connected to the transmit portion of the electronically tunable diplexer, and a receiver connected to the receive portion of the electronically tunable diplexer;

the base station further comprising a generator connected to the transmitter for providing the electronically tunable diplexer with an input test signal characterizing the radio frequency sub-band allocated to the base station;

a transceiver loop connected to the electronically tunable diplexer and the transceiver for delivering a portion of the input test signal and a portion of an output test signal generated from the input test signal in the electronically tunable diplexer to the receiver;

an analyzer connected to the receiver and a control unit for determining a response of the electronically tunable diplexer to the input test signal based on the portion of the input test signal and the portion of the output test signal; and

the control unit connected to the electronically tunable diplexer and the generator for controlling tuning of the electronically tunable diplexer based on the response of the electronically tunable diplexer to the input test signal.

9. A base station according to claim 8, wherein the transceiver loop is configured to convert the portion of the input test signal to a receive sub-band allocated to the base station.

10. A base station according to claim 8, wherein the transceiver loop is configured to convert the portion of the output test signal to a receive sub-band allocated to the base station.

11. A method of configuring a base station in a cellular telecommunication system, comprising:

tuning, on site, an electronically tunable diplexer connected to an antenna unit, a tuning range of the electronically tunable diplexer covering at least two radio frequency sub-bands used parallel in a telecommunication system, to a radio frequency sub-band allocated to a base station; and

adjusting a transceiver connected to the electronically tunable diplexer to perform a conversion between a fixed frequency band and the radio frequency sub-band allocated to the base station, the transceiver including a signal conversion chain for performing at least a portion of the conversion, at least a portion of the signal conversion chain being shared between frequencies within the tuning range.

12. A method according to claim 11, further comprising:

tuning the electronically tunable diplexer, the tuning range of the electronically tunable diplexer covering receive sub-bands of at least two system bands, to a receive sub-band allocated to the base station.

13. A method according to claim 11, further comprising:

tuning the electronically tunable diplexer, the tuning range of the electronically tunable diplexer covering transmit sub-bands of at least two system bands, to a transmit sub-band allocated to the base station.

14. A method according to claim 11, further comprising:

tuning the electronically tunable diplexer, the tuning range of the electronically tunable diplexer covering at least two receive sub-bands of a system band, to a receive sub-band allocated to the base station.

15. A method according to claim 11, further comprising:
tuning the electronically tunable diplexer, the tuning range of the electronically tunable diplexer covering at least two transmit sub-bands of a system band, to a transmit sub-band allocated to the base station.

16. A method according to claim 11, further comprising:
providing the electronically tunable diplexer with an input test signal characterizing the radio frequency sub-band allocated to the base station;
delivering a portion of the input test signal and a portion of an output test signal generated in the electronically tunable diplexer to a receiver;
receiving the portion of the input test signal and the portion of the output test signal in the receiver;
determining a response of the electronically tunable diplexer to the input test signal based on a received portion of the input test signal and a received portion of the output test signal; and
tuning the electronically tunable diplexer based on the response of the electronically tunable diplexer to the input test signal.

17. A method according to claim 16, further comprising:
converting the portion of the input test signal to a receive sub-band frequency.

18. A method according to claim 16, further comprising
converting the portion of the output test signal to a receive sub-band allocated to the base station.

19. A base station in a cellular telecommunication system, comprising:

tuning means for tuning, on site, an electronically tunable diplexer connected to an antenna unit, the a tuning range of the electronically tunable diplexer covering at least two radio frequency sub-bands used parallel in the a telecommunication system, to a radio frequency sub-band allocated to the a base station; and

adjusting means for adjusting a transceiver connected to the electronically tunable diplexer to perform a conversion between a fixed frequency band and the radio frequency sub-band allocated to the base station, the

transceiver including a signal conversion chain for performing at least a portion of the conversion, at least a portion of the signal conversion chain being shared between frequencies within the tuning range.